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Amendments to the Claims

Please cancel Claims 2, 9, 16, 22, 27, 28, 33 and 34 without prejudice to or disclaimer of the subject matter recited therein.

Please amend Claims 1, 3, 8, 10, 11, 13, 15, 18, 23, 24, 26, 29-32 and 35 to read as follows.

1. (Currently amended) A printing apparatus ~~having printing means~~ using a printing means that executes printing on a print medium transported along a transportation path, ~~the said~~ apparatus comprising:

upstream transporting means including a ~~pair of rollers~~ transportation roller driven by a driving means and a pinch roller, arranged upstream of ~~said the~~ printing means in the transportation path for transporting the print medium by rotating while sandwiching the print medium at a nip portion;

downstream transporting means arranged downstream of ~~said the~~ printing means in the transportation path for transporting the print medium;

information obtaining means for obtaining nip position information, said information obtaining means comprising rotation state detecting means for detecting a state of rotation of said transportation roller in a state in which the print medium is sandwiched between said transportation roller and said pinch roller at the nip portion thereof and in a state in which the print medium has passed out from the nip portion, and measuring means for measuring an interval between a predetermined reference position located upstream of

the nip portion in the transportation path and the nip portion, on the basis of a result of detection by said rotation state detecting means; and

storage means for storing the nip position information ~~representative of a position of a nip portion between said pair of rollers within the transportation path, wherein the nip position information relates to an interval between a predetermined reference position located upstream of the nip portion in the transportation path and the nip portion obtained by said information obtaining means.~~

Claim 2 (cancelled).

3. (Currently amended) A printing apparatus as claimed in claim 1, wherein said downstream transporting means comprises a sheet discharging roller located downstream of ~~said~~ the printing means in the transportation path and driven by predetermined driving means and a spur that is urged toward said sheet discharging roller.

4. (Withdrawn) A printing apparatus as claimed in claim 1, wherein said nip position information is set on the basis of a test pattern formed on the print medium by said printing means and said transportation means using printing data for forming an image that extends continuously in a transportation direction of said print medium.

5. (Withdrawn) A printing apparatus as claimed in claim 4, wherein said nip position information is set on the basis of an interval between a predetermined reference position in said test pattern and a leading end of a discontinuous portion.

6. (Withdrawn) A printing apparatus as claimed in claim 4, wherein when said test pattern is printed, said transporting means transports said print medium 1 mm or less during a single operation when a back end of said print medium is near said nip portion.

7. (Withdrawn) A printing apparatus as claimed in claim 4, further comprising information obtaining means for automatically obtaining said nip position information, the information obtaining means comprising a photosensor that reads a printed part and a non-printed part both formed in the test pattern and means for measuring the interval between the predetermined reference position in the printed part of the test pattern and the leading end of the non-printed part, on the basis of an output signal from a photosensor.

8. (Withdrawn) A printing apparatus as claimed in claim ~~2~~ 1, further comprising information obtaining means for automatically obtaining said nip position information, the information obtaining means comprising roller displacement detecting means for detecting displacement of the pinch roller between a state in which the print medium is sandwiched between the transportation roller and the pinch roller at the nip

portion thereof and a state in which the print medium has slipped out from said nip portion, and means for measuring the interval between a predetermined reference position located upstream of said nip portion in the transportation path and said nip portion, on the basis of a result of detection by the roller displacement detecting means.

Claim 9 (cancelled).

10. (Currently amended) A printing apparatus as claimed in claim 9 1, wherein said rotation state detecting means detects a change in the speed of rotation of said transportation roller.

11. (Currently amended) A printing apparatus as claimed in claim 9 1, wherein said rotation state detecting means detects a change in the quantity of rotations during each intermittent rotating operation of said transportation roller.

12. (Withdrawn) A printing apparatus as claimed in claim 4, wherein during an image forming operation performed immediately after the back end of said print medium has slipped out from said nip position, a correcting operation is performed which shifts an operative part of said printing means in the transportation direction compared to an image forming operation performed immediately before the back end slips out from the nip portion, while increasing the quantity of transportation by the transporting means.

13. (Currently amended) A printing apparatus as claimed in claim 9 1, wherein said rotation state detecting means comprises an optical code wheel that rotates around the same center of rotation as that of said transportation roller, and a sensor that reads a signal from said optical code wheel.

14. (Original) A printing apparatus as claimed in claim 1, wherein said printing means uses thermal energy to generate bubbles in ink so that energy generated by the bubbles can cause the ink to be ejected.

15. (Currently amended) A printing method for executing printing on a print medium transported along a transportation path by using printing means, said printing method comprising the steps of:

transporting the print medium by upstream transporting means including a ~~pair of rollers~~ a transportation roller and a pinch roller, arranged upstream of the printing means in the transportation path while sandwiching the print medium at a nip portion;

transporting the print medium by downstream transporting means arranged downstream of the printing means in the transportation path; ~~and~~

storing nip position information representative of a position of ~~a~~ the nip portion between the ~~pair of rollers~~ transportation roller and the pinch roller within the transportation path, wherein the nip position information relates to an interval between a predetermined reference position located upstream of the nip portion in the transportation path and the nip portion; and

an information obtaining step of obtaining the nip position information, the information obtaining step comprising a rotation state detecting step of detecting a state of rotation of the transportation roller between a state in which the print medium is sandwiched between the transportation roller and the pinch roller at the nip portion thereof and a state in which the print medium has passed out from the nip portion, and a step of measuring the interval between a predetermined reference position located upstream of the nip portion in the transportation path and the nip portion, on the basis of a result of detection by said rotation state detecting step.

Claim 16 (cancelled)

17. (Withdrawn) A printing method as claimed in claim 15, wherein said nip position information is set on the basis of a test pattern formed on the print medium by said printing means and said transportation means using printing data for forming an image that extends continuously in a transportation direction of said print medium.

18. (Withdrawn) A printing method as claimed in claim ~~16~~ 17, wherein said nip position information is set on the basis of an interval between a predetermined reference position in said test pattern and a leading end of a discontinuous portion.

19. (Withdrawn) A printing method as claimed in claim 17, wherein when said test pattern is printed, said transporting means transports said print medium 1 mm or less during a single operation when a back end of said print medium is near said nip portion.

20. (Withdrawn) A printing method as claimed in claim 17, comprising an information obtaining step of automatically obtaining said nip position information, the information obtaining step comprising the steps of reading a printed part and a non-printed part both formed in the test pattern and measuring the interval between the predetermined reference position in the printed part of the test pattern and the leading end of the non-printed part, on the basis of an output signal from a photosensor.

21. (Withdrawn) A printing method as claimed in claim 15, comprising an information obtaining step of automatically obtaining said nip position information, the information obtaining step comprising a roller displacement detecting step of detecting displacement of the pinch roller between a state in which the print medium is sandwiched between the transportation roller and the pinch roller at the nip portion thereof and a state in which the print medium has slipped out from said nip portion, and a step of measuring the interval between a predetermined reference position located upstream of said nip portion in the transportation path and said nip portion, on the basis of a result of detection by the roller displacement detecting step.

Claim 22 (cancelled).

23. (Currently amended) A printing method according to claim ~~22~~ 15, wherein said rotation state detecting step detects a change in the speed of rotation of the transportation roller.

24. (Currently amended) A printing method according to claim ~~22~~ 15, wherein said rotation state detecting step detects a change in the quantity of rotations during each intermittent rotating operation of the transportation roller.

25. (Withdrawn) A printing method according to claim 17, wherein during an image forming operation performed immediately after the back end of said print medium has slipped out from said nip position, a correcting operation is performed which shifts an operative part of said printing means in the transportation direction compared to an image forming operation performed immediately before the back end slips out from the nip portion, while increasing the quantity of transportation by the transporting means.

26. (Currently amended) A printing apparatus having printing means that executes printing on a print medium transported along a transportation path, ~~the~~ said apparatus comprising:

upstream transporting means arranged upstream of ~~said~~ the printing means in the transportation path for transporting the print medium, said upstream transporting

means comprising a transportation roller driven by predetermined driving means and a pinch roller cooperatively sandwiching the print medium between said pinch roller and said transporting roller;

downstream transporting means arranged downstream of ~~said~~ the printing means in the transportation path for transporting the print medium; ~~and~~

first detecting means arranged upstream of said upstream transporting means to detect the print medium passing through a predetermined position;

second detecting means for detecting the print medium passing through a nip portion between said transportation roller and said pinch roller;

measuring means for measuring a transported distance after an end of the print medium passes through the predetermined position until it passes through said upstream transporting means based on results detected by said first detecting means and said second detecting means; and

storage means for storing information ~~relative~~ related to a the transported distance after ~~an~~ the end of the print medium passes through a the predetermined position until it passes through said upstream transportation means based on a result measured by said measuring means.

Claims 27 and 28 (cancelled).

29. (Currently amended) A printing apparatus ~~as claimed in claim 28~~
having printing means that executes printing on a print medium transported along a
transportation path, said apparatus comprising:

upstream transporting means arranged upstream of the printing means in the
transportation path for transporting the print medium, said upstream transporting means
comprising a transportation roller driven by predetermined driving means and a pinch
roller cooperatively sandwiching the print medium between said pinch roller and said
transporting roller;

downstream transporting means arranged downstream of the printing means
in the transportation path for transporting the print medium;

first detecting means arranged upstream of said upstream transporting
means to detect the print medium passing through a predetermined position;

second detecting means for detecting the print medium passing through a
nip portion between said transportation roller and said pinch roller; and

storage means for storing information related to a transported distance after
an end of the print medium passes through the predetermined position until it passes
through said upstream transporting means,

wherein said second detecting means detects a temporary increase of
rotation speed of said transportation roller.

30. (Currently amended) A printing apparatus as claimed in claim 28 26, wherein said second detecting means detects an increase in a rate of the number of rotations of said transportation roller to a driving amount of said driving means.

31. (Currently amended) A printing apparatus as claimed in claim 28 26, further comprising control means controlling ~~to store~~ storage of the driving amount of said driving means to said storage means as the information of the transported distance after said first detecting means detects the print medium passing through a the predetermined position until said second detecting means detects the print medium passing through a said nip portion between said transportation roller and said pinch roller.

32. (Currently amended) A printing apparatus comprising:
a transportation roller to be driven by driving means through a gear train;
a pinch roller which sandwiches a print medium between said pinch roller and said transportation roller in a cooperative manner;
printing means for performing printing onto the print medium, said printing means being placed downstream of said transportation roller in a transportation path; and
transporting means for transporting the printing medium, said transporting means being placed downstream of said printing means in the transportation path;
control means for controlling said transportation roller and said transporting means to repeat a drive of and a stop after transportation of a predetermined transportation

amount by turns, and for further controlling said printing means to perform printing while the said transportation roller is in a stop condition;

detecting means for detecting an end of the print medium passing through a predetermined position upstream of said transportation roller; and

storage means for storing an interval between the predetermined position and a nip portion between said transportation roller and said pinch roller,

wherein said control means controls said driving means such that, ~~immediately after an end of the print medium has passed through a nip portion between said transportation roller and said pinch roller, said transportation roller is driven by an excessive driving amount beyond a driving amount of said driving means corresponding to a backlash of said gear train, thereby performing printing of a position corresponding to a transported amount of the print medium~~ while transporting by the predetermined transportation amount, when a transportation amount after the end of the print medium is detected by said detecting means exceeds a distance stored in said storage means, an excessive transportation amount of transporting the printing medium beyond a transportation amount caused by idling of said transportation roller due to a backlash of said gear train when the end of the print medium passes through the nip between said transportation roller and said pinch roller in addition to the predetermined transportation amount is effected, thereby performing printing of a position continuous to an image previously printed by said printing means.

Claims 33 and 34 (cancelled).

35. (Currently amended) A printing apparatus as claimed in ~~any one of claims 32 to 34~~ claim 32, wherein said printing means has a plurality of ejection ports for ejecting ink, and said controlling means controls to eject ink from said ejection ports selected for printing on a position corresponding to a transported amount of the print medium after an end of the print medium passes through the nip position between said transportation roller and said pinch roller.